

CYBORGS :TECHNICAL STUDY

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ABSTRACT:

Study on cyborgs and its later advancement to humanoids. Cyborgs are half human and half robot beings by the term. The scientific revolution on this field has proved to be an advantage to humans. Cyborgs in the sense are an additional organ or functional system to human aid. Handicapped and internal or externally organ damaged people can use any robotic aid for proper living. Cyborgs were developed based on cybernetics.

1. INTRODUCTION:

Cybernetics is the interdisciplinary study of the structure of the regulatory system. Cybernetics is closely related to control theory and system theory. Contemporary cybernetics began as an interdisciplinary study connecting the fields of control systems, electrical network theory, mechanical engineering, logic model, evolutionary biology, neuroscience etc. Cyborgs are originated from the concept of cybernetics, which is referred as a mixture of both organism and technology. When an organism is half human and half machine then we call them Cyborg. The whole process of becoming a cyborg is known as Cyborgation. Among the Cyborgs living today Dr.Kelvin Warwick heads the Cybernetics Department at the University of Reading in the United Kingdom and has taken the first steps on this path, using himself as a test subject receiving, by surgical operation, technological implants connected to his central nervous system. The world's first Cyborg was a white lab rat, part of an experimental program at New York's Rockland State Hospital in the late 1950's. The rat had implanted in its body a tiny osmotic pump that injected precisely controlled doses of chemicals, altering several of its physiological parameters. It was part animal, part machine.

11. REVIEW ON CYBORG:

CYBORG, a compound word derived from Cybernetics and Organism, is a term coined by Manfred Clynes in 1960 to describe the need for mankind to artificially enhance biological functions in order To survive in the hostile environment of space. Originally, a CYBORG referred to a Human being with a bodily functions aided or controlled by technological devices, such as an oxygen tank, artificial heart valve or insulin pump. Over the years, the term has

acquired a more general meaning, describing the dependence of human beings on technology. In this sense, CYBORG can be used to characterize anyone who relies on a computer to complete his or her daily work. A CYBORG is a Cybernetics Organism, part human part machine. This concept is bit tricky but let see an example of a CYBORG: you may have seen a movie TERMINATOR. In that ARNOLD was a CYBORG. He was part man- part machine. Well definition exactly says this; CYBORG can be made by technology known as CYBERNETICS. To understand CYBORG, this is the first step that we'll see in the next topic.

CYBERNETICS:

Cybernetics is word coined by group of scientists led by Norbert Wiener and made popular by Wiener's book of 1948, Cybernetics or Communication in the animal and the Machine. Based on the Greek Kybernetics, meaning steersman or governor, cybernetics is the science or study of the control or regulation mechanism in human and machine systems, including computers. CYBERNETICS could be thought of as recently developed science, although to some extent it cuts across existing science. If we think of Physics, Chemistry, Biology, etc. as a traditional science, then Cybernetics is a classification, which cuts across them all. Cybernetics is formally defined as the science of control and communication in animals, men and machines. It extracts, from whatever context, that which is concerned with information processing and control. One major characteristics of cybernetics is its preoccupation with the construction of models and here it overlaps operational research. Cybernetics models are usually distinguished by being hierarchical, adaptive and making permanent use of feedback loop. Cybernetics in some ways is like the science of organization, with special emphasis on the dynamic nature of the system being organized.

III. REAL LIFE CYBORGS

Cyborgs are Cybernetic Organisms. The term was coined in 1960's when Manfred Clynes and Nathan used it in an article about the advantages of self regulating human-machine systems in outer space. The CYBORGS Cyborgs got there fame mainly through the super talented characters in the fiction stories. A cyborg can be defined as individual who is innovatively supplemented by outer or inside gadgets that compliment or, on the other hand control different human body capacities.. Cyborgology is a technical and socio-philosophical study which deals with the development

weapon pods.

3.1 ROBOTS & CYBORGS

All of them, to some degree, are programmed; they're basically computers that move. A robot, however, doesn't necessarily have to resemble a human. It can be in the shape of a dog, or a lunar Lander, or one of those giant arms in a car factory. But cyborgs are beings that are part mechanical and part organic. In fact, some theorists consider anyone whose body relies on a form of machinery in order to survive such as a pacemaker or an insulin pump to be a cyborg.

Convenient Cyborgs Conditional Cyborgs

Cyborgs are categorized into two types based on their structural and functional role play. Structurally cyborgation can take place either internally or externally. The former convenient cyborgs may refer to any external provision of an exoskeleton for the satisfying the altered fancy needs of body, and the latter Conditional cyborgation includes bionic implants replanting the lost or damaged body part for CYBORGS the normal living in the present environment. There are also different types of cyborgs differentiated as per their body working.

HYBROTS

A Hybrot (short for "hybrid robot") is a cybernetic organism in the form of a robot controlled by a computer consisting of both electronic and biological elements. The biological elements are rat neurons connected to a computer chip. This feat was first accomplished by Dr. Steve Potter, a professor of biomedical engineering at the Georgia Institute of Technology. What separates a hybrot from a cyborg is that the latter term is commonly used to refer to a cybernetically enhanced human or animal; while a hybrot is an entirely new type of creature constructed from organic and artificial materials. It is perhaps helpful to think of the hybrot as "semi-living," a term also used by the hybrot's inventors. Another interesting feature of the hybrot is its longevity. Neurons separated from a living brain usually die after a short period of time; however, due to a specially designed incubator utilizing a new sealed-dish culture system, a hybrot may live as long as two years.

3.2 Archetype

The cyborg archetype is a character in a near future world where societal decay has led to the adoption of metal parts. These cyborgs are commonly armed with paramilitary in-built weaponry or are otherwise survival and combat oriented. Some possible scenarios might be: The low-life down on Wattson block discover that the Gamma Corp has plans to renovate the slum developments by arranging for one of the obsolete orbital refineries to fall out of orbit on it. The characters are a mix of cyborgs and extremely competent humans who are hired /motivated to protect their homes. A new virus has been trashing mainframes across the net. There seems to be no defence and very little evidence of how it spreads or how it's getting into the system. The characters are freelance contractor- cowboys who have their brains wired for cybernetic net access. They are brought in to track (in cyberspace) a mysterious individual who seems to be somehow connected to virus. The characters are a group of vat-grown clones that have been cybernetically augmented for mining on Saturn's moons. Now, they've escaped to earth and, nearing the end of their artificially shortened life cycle they must convince their creator/engineer to give them longevity and elude the human assassin/cop who's chasing them. Keeping up with the latest modifications takes a lot of money. Fortunately you can use

3.3 Life Support System

The cyborg is fitted with lungs that can store and meter compressed air to the character. The character's skin will be sealed and the resulting cyborg will be able to survive in airless conditions for some time. In fact, the cyborg will be able to buddy breathe with one or more people (divide the total time by the number of people supported). Because the character's blood system is not susceptible to relatively slow pressure changes (the bends) the character can operate under water or, perhaps, in high atmosphere pressures on some other planet.

The character's skin, while appearing normal is impervious to heat and cold: a certain amount of environmental armour is granted to the character. This is applied against any damage from temperature changes (including rapid ones like flame throwers, plunging one's hand into liquid nitrogen to retrieve cloned eyeballs, whatever).

3.4 Hardwired Reflexes (REF Enhancement)

Biological nerves are slow: chemical bridges are built to transmit electrical impulses through tissue. This can be improved upon the nerve trunks can be replaced with spun glass and electrical switch junctions. The clocks in the brain that control reaction speed can be upgraded with wetware patches to give the recipient quicker reflexes. Reflex loops which control automatic responses (like pulling one's hand back from a hot surface) can be upgraded to smart reflexes where the character takes other actions dependent on the situation. Hardwired reflexes give the character a higher REA score and an even higher initiative roll.

3.5 Neural Jacks (INT Enhancement)

Wiring the brain with sockets into which pieces of hardware can be attached is the next frontier of human- computer interface. The basic neural jack involves (depending on the GM's view of the technology) creating a channel in the brain which opens to an outside interface port and connects on the inside to a patch which consists of fiber optics, neural-net logic-gate arrays, and biological tissue. The basic jack allows different attachments from skill-chips to computer targeting systems. The patch brings some functions of the brain up to computer like speeds as the wearer learns to formulate questions in such a way as to use the patch's high-speed processing power.

3.6 Skill Chip Slot

A skill chip is a database coupled with natural language query hardware which fits into a chip slot. The chip slot requires a neural jack. Once a character is fitted he can buy skill chips (usually sold on the open market) and simply insert the chip to know the skill. A chip usually contains a MEM or RES based skill at Level 2 proficiency or it can contain a database of a specific sort holding several Gigabytes of data on some topic (mixed drinks, classic cars, rules of card games). Some very rare and super expensive chips contain Level 3 skills. These take two slot locations. The skills themselves exist in the interconnections of a chemical matrix within the chip housing copying them has proven impossible: each must be taken from a live human and is a time consuming process.

3.7 The DataNet and the Fuge

The world of the cyberpunk will be connected by massive datatrunks that anyone can tap into if they have a computer, the skill, and maybe some help. Virtually everything is in there somewhere or someone knows how to find it. It's accessible from just about anywhere on the planet and

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 neural-modified cyborgs live there. To purchase these abilities you must have a Mk 2 Neural Jack or better. Anyone with computer skill and Electronic Underground and a net account can interact with the DataNet. That's just a matter of knowhow.

Interacting (Fugue Dancing) with the Fugue is another matter altogether. First you need training (and you usually don't get it in university classes). Secondly you need a piece of hardware in your head that takes the data in and filters it through your brain. That's called an Information Sieve.

IV. LATEST TECHNOLOGY

At present Cyborgology concentrates on the development of Conditional cyborgs. That is living being with a mechanical body part which is replaced for the damaged or lost body part. Among them has prime importance, it has functioning similar to our leg. These external mechanical parts works by the stimulations received generated from our neural system.

IN MILITARY:

In defensive applications the Cybernetics and Cyborgological experiences are held for the development of Cyborg soldier. The cyborg soldier often refers to a soldier whose weapons as well as the survival systems are integrated into the self, creating a human-machine interface. Military associations inquire about has as of late centred on the usage of cyborg creature. DARPA has declared its enthusiasm for creating cyborg creepy crawlies to transmit information from sensors embedded into the creepy crawlly amid it's pupil organize. The creepy crawl's movement would be controlled from a Micro-Electro-Mechanical-System for detecting the presence explosives and Gas. DARPA is also developing neural implant to remotely control the movement of sharks. Powered Exoskeleton is another proposed product from Cyborgology for military purpose, which combines a human control system with robotic muscle.

IN SPORTS:

Prosthetic legs and feet are not advanced enough to give the athlete the edge, and people with these prosthetics are allowed to complete, possibly only because they are not actually competitive in such althorns. Some prosthetic leg and feet allow for runners to adjust the length of their stride which could potentially improve run times and in time actually allow a runner with prosthetic leg to be fastest in the world.

CONCLUSION

Humans have limited capabilities. Humans sense the world in a restricted way, vision being the best of the senses. Humans understand the world in only 3 dimensions and communicate in a very slow, serial fashion called speech. But it must get improved for the human beings to exist in this competitive world. Only technology can make it possible. And Cyborgology is the future technology for the purpose to be get real. Even it has some major defects and wrong sides as like any technologies evolving now days. Finally I would like to say that if the future of intelligent robots, then to protect mankind, we will must need some TERMINATORS. They all are CYBORGS. Because by making human CYBORGS, we may have the following extra ordinary capabilities: We will be able to communicate between each other by thought signals alone, so no more need for telephones, old fashioned signals, we all are able to think to each other via implants. Instead of communicating by speech as we do presentlv. we will be able to think to

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 each other, simply by implants connected to our nervous system linking our brains electronically together, possibility even over the internet. We won't need the languages that we presently do, we'll need a new language of ideas and the concepts in order to communicate thoughts from brain to brain.

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